# Lower Utilization of Dermatologists in Managed Care: Despite Growth in Managed Care, Visits to Dermatologists Did Not Decrease: An Analysis of National Ambulatory Medical Care Survey Data, 1990–1992

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**Growth of managed care and the decline of direct access are two of the major issues confronting dermatology. Previous study has demonstrated that patients in managed care are less likely than patients with indemnity insurance to see a dermatologist for skin problems, and it was predicted that this would result in a slowing in the demand for dermatologist services. To examine whether the changing healthcare environment has resulted in fewer visits to dermatologists, we used National Ambulatory Medical Care Survey data from the years 1990–1992 to examine utilization of dermatologist services over a period in which managed care grew by 32%. Patients with HMO/prepaid insurance were less likely to have their skin care provided by dermatologists than patients with commercial insurance (Blue Cross/Blue Shield and other commercial carriers) or Medicare. A reduction in the number of visits to dermatologists was observed among patients with HMO/prepaid insurance despite the growth in HMO/prepaid insurance as a form of payment; when all payors were considered, however, the number of visits to dermatologists increased from the 1989 level, reaching a plateau in 1992. The number of visits for skin disease to all physicians increased from 56.5 million to 63.5 million, whereas the proportion of this care delivered by dermatologists decreased from 39.6% to 37.9%. The overall increase in visits for skin conditions tempered the reduction in demand for dermatology services expected with the growing transition to managed care.** ***Key words: skin disease/economics/health services research/HMO. J Invest Dermatol 107:860–864, 1996***

The role of managed care and the decline of direct access to the specialist are two of the major issues confronting the practicing dermatologist in the 1990s (Grant-Kels and Kels, 1993). Managed care is a complex and dynamic process of delivering health care that utilizes an array of mechanisms for controlling costs (Hughes and Waters, 1993; Grumbach and Bodenheimer, 1995). An essential difference between health maintenance organizations (HMOs) and traditional forms of health insurance is in the distribution of financial risk between the insured, the insurer, and the provider of health care (Hillman, 1987). HMOs guarantee a fixed price for a range of medical services. To maintain their economic viability, HMOs encourage cost conscious behavior through the use of utilization review, education, and informatics, as well as gatekeepers and financial incentives that restrict access to specialists and expensive specialist care (Hillman, 1987; Grumbach and Bodenheimer, 1995, Solomon *et al*, 1996). Dermatology faces special challenges regarding access to patients in the managed care environment (Hughes and Waters, 1993; Lazarus, 1994).

There is limited research data on the effects of managed care, in particular, effects on the flow of patients to dermatologists (Hughes and Waters, 1993; Miller and Luft, 1994). Manpower estimates have suggested that nationally (notwithstanding geographic variation) there are about the right number of dermatologists for a managed care environment; the per capita number of clinically active dermatologists is roughly equal to the number employed by classic, staff-model HMOs (Hughes and Waters, 1993; Wennberg *et al*, 1993). These staff-model HMOs yield cost savings primarily through decreases in hospitalization, often with no change or increases in outpatient visits (Clement *et al*, 1994; Miller and Luft, 1994; Cooper, 1995). Recent growth in managed care has primarily been in for-profit, network type HMOs (Gold *et al*, 1995). These HMOs may provide strong financial incentives to physicians to reduce care, and recent studies show decreases in outpatient utilization as well as hospitalization (Miller and Luft, 1994; Robinson and Casalino, 1995; Woolhandler and Himmelstein, 1995). These new patterns suggest that previous manpower estimates may be inaccurate.

Clement *et al* (1994) compared physician access and outcomes of Medicare HMO enrollees with similar fee-for-service enrollees. HMO enrollees with joint or chest pain were significantly less likely

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Abbreviation: NAMCHS, National Ambulatory Medical Care Survey.

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**Table I. Managed Care Patients are Less Likely to see a Dermatologist for Skin Conditions**[a]

| Expected Source of Payment | Acne Vulgaris | | | Viral Wart | | | Contact Dermatitis NOS[b] | | | Skin Cancer NOS | | | All Dermatologic Diagnoses | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 1991 | 1992 | 1990 | 1991 | 1992 | 1990 | 1991 | 1992 | 1990 | 1991 | 1992 | 1990 | 1991 | 1992 |
| HMO/other prepaid insurance | 2.91 | 2.04 | 2.55 | 0.07 | 0.99 | 0.33 | 0.57 | 0.27 | 0.52 | 0.91 | 3.32 | 0.82 | 0.50 | 0.56 | 0.31 |
| Blue Cross/Blue Shield & other commercial insurance | 8.32 | 4.05 | 11.9 | 2.13 | 1.18 | 1.26 | 0.4 | 0.63 | 7.74 | 7.00 | 7.21 | 4.12 | 1.41 | 0.85 | 0.80 |
| Medicare | 3.62 | 8.7 | | 0.35 | 3.06 | 0.77 | 0.72 | 0.93 | 1.43 | 2.3 | 4.25 | 10.9 | 0.77 | 1.28 | 1.10 |

[a] For each payment source and condition, the ratio of visits to dermatologists *versus* other physicians was calculated. Variation in the data for specific conditions is a statistical effect of the small sample size for data on individual diagnoses.
[b] NOS, not otherwise specified.
[c] Division by zero makes data unavailable.

than non-enrollees to see a specialist for care (Clement *et al*, 1994); joint pain in HMO enrollees was less likely to have improved. Although similar studies have not been performed for skin conditions, Stern and Nelson (1993) analyzed 1989 and earlier data from the National Ambulatory Care Survey (NAMCS) and found a diminished role of the dermatologist in caring for skin disease. Their data showed much greater use of non-dermatologists for care of skin disease by patients in HMO or preferred provider organizations. They predicted that growing use of these forms of payment would result in a "substantial negative impact on the demand for dermatologists' services." To test the hypothesis that growing managed care would result in diminished use of dermatology services over time, we analyzed 1990, 1991, and 1992 NAMCS data.

## MATERIALS AND METHODS

NAMCS is conducted by the National Center for Health Statistics as an ongoing descriptive data collection effort regarding office-based physician practice (National Center for Health Statistics, 1992, 1993, 1994). The sampling was limited to nonfederally employed physicians principally engaged in outpatient care activities. The multistage probability sampling design was stratified by primary sampling unit (county, contiguous counties, or standard metropolitan statistical area), then by physician practices within the sampling unit, and, finally, by patient visit within the 52 weekly randomized periods. Within small practices, a 100% sample of visits during a 1-wk period was possible. For very large practices, 20% of patient visits were randomly sampled. The resulting national estimates describe the utilization of ambulatory services in the United States.

The study interval of 1990–1992 was chosen because these were the most recent data available. For all patients and diagnoses, the entire 1990, 1991, and 1992 data bases have respectively 43,469, 33,795, and 34,606 records, which are used to estimate the experience of 704, 670, and 762 million annual office-based visits of all types in the United States. For each visit sampled, a one-page patient log was completed that included demographic data, reasons for patient visits, physicians' diagnoses, services provided, and referral practices. For this study, visits coded with HMO/prepaid insurance were considered "managed care." To determine whether the study interval was sufficiently long to detect changes in practice patterns due to managed care, we determined the total number of visits for all problems covered by HMO/prepaid insurance. Over the study interval of 1990–1992, HMO/prepaid insurance increased from 14.5% of all visits ($1.01 \times 10^8$ visits) in 1990 to 19.2% ($1.46 \times 10^8$ visits) in 1992. Thus, there was a 32% increase in the percentage of visits covered by HMO/prepaid insurance (and a 45% increase in the actual number of visits covered by HMO/prepaid insurance). This substantial increase in the number of visits covered by HMO/prepaid insurance provides a methodologic basis for studying the effect of managed care on practice patterns.

To define dermatologic diagnoses, the entire dermatologist subsample was extracted from the 1990 national data base, and primary, secondary, or tertiary diagnoses representing greater than 0.1% of visits to these clinicians were identified. After review of the resultant International Classification of Diseases codes, "V" codes (supplemental classification of factors influencing health status and contact with health services) were eliminated as were other nondermatologic diagnoses (Med Index Pub, 1992; Krowchuk *et al*, 1994). Using the remaining codes, data for all providers were studied to isolate those visits for which the primary diagnosis was a dermatologic condition; such visits were considered visits for skin care, the primary variable assessed in this study. An identical process was performed with the 1991 and 1992 data sets.

Sampling weights were applied to achieve the nationally representative estimates. Variables chosen for analysis were thought *a priori* to represent the most likely variables on which managed care may have an impact. These variables included all variables dealing with payment for physician services, disposition of patients, and sources of patients. Additionally, the specific diagnoses in each year were reviewed. The NAMCS method for recording ambulatory surgery changed from 1990 to 1991, allowing for much greater evaluation of these data.

All estimates derived from the NAMCS are subject to sampling variability. The relative mean ± SE is a measure of sampling variability and is related to the number of patient visits. Representative relative mean ± SEs for the 1990 NAMCS are as follows: 8% for estimates of 10,000,000 visits, 22.4% for estimates of 1,000,000 visits, 31.5% for estimates of 500,000 visits, and 69.7% for estimates of 100,000 visits. Relative mean ± SE rates from 1991 and 1992 are similar, and details may be obtained from National Center for Health Statistics published information. The statistical significance of differences between means was assessed by two-tailed t test, and differences between proportions was assessed by z approximations (Dawson-Saunders and Trapp, 1994). The analysis was performed with the Statistical Analysis System (SAS Institute, Cary, NC).

## RESULTS

**Patients in Managed Care Are Less Likely to See a Dermatologist for Skin Conditions** To assess the effect of managed care on utilization of dermatologists, relative rates of visits to dermatologists compared with visits to non-dermatologists have been studied and previously reported (Stern and Nelson, 1993). In this study, the ratio of visits to dermatologists *versus* non-dermatologists was determined for different payors to confirm the previous observation that patients with HMO/prepaid insurance have lower utilization of dermatologists. To permit comparison with 1989 data, the results are presented in **Table I** in the format used in the previous report (Stern and Nelson, 1993). The medical insurance status of the patient appeared to influence the type of physician providing the care. Patients with HMO/prepaid insurance were less likely to have their care provided by dermatologists than those with commercial insurance (Blue Cross/Blue Shield and other commercial carriers) or Medicare. Compared to the data for all payors, utilization of dermatologists was significantly lower in managed care in each of the 3 y studied **(Fig 1)**. HMO/prepaid enrollees were 15% less likely to see a dermatologist for a skin condition in 1990, 19% less likely in 1991, and 37% less likely in 1992. Despite the growth in the managed care sector, dermatologist visits in managed care actually declined from 3.6 million visits in 1990 (6.4% of all visits for skin disease in 1990) to 2.8 million visits in 1992 (4.4% of all visits in 1992, $p < 0.001$, **Table II**).

Differences between the population of enrollees in managed care compared to traditional insurance with respect to prevalence or severity of medical conditions could account for differences in the

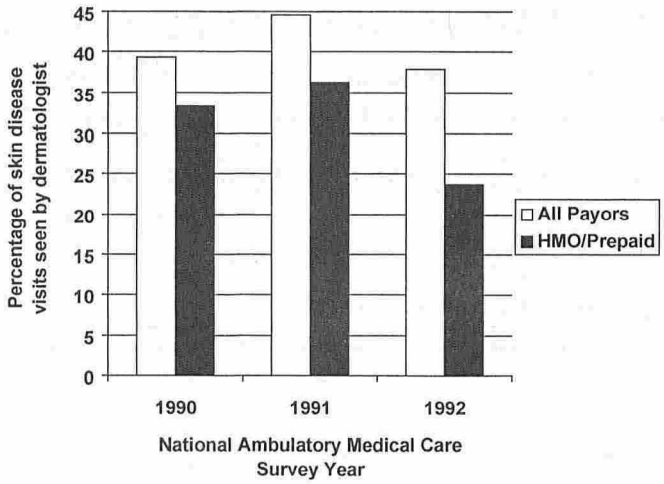


**Figure 1. The proportion of visits for skin disease seen by dermatologists is lower in managed care.** The proportion of visits for skin disease seen by dermatologists was determined by dividing the number of skin disease visits seen by dermatologists by the number of skin disease visits seen by all physicians combined. The difference between the rates for "All payors" *versus* "HMO/prepaid" was significant at the $p < 0.001$ level in each year (z approximation).

utilization of dermatologists. To determine whether differences in utilization of dermatologists were biased by differences in the populations covered by different insurance carriers, data on specific diagnostic subgroups were considered **(Table I)**. The results mirror those of Stern and Nelson (1993). Patients covered by HMO/prepaid insurance were still less likely to have received care from a dermatologist.

After identifying the unexpected decrease in the number of visits to dermatologists within the growing managed-care sector, we addressed whether there was any changing tendency in managed care not to address skin problems. To test for this, visits for skin conditions as a proportion of all visits in the HMO/prepaid sector were determined **(Table III)**. Vists for skin conditions as a proportion of all visits dropped 24% from 10.6% in 1990 to 8.0% in 1992 ($p < 0.001$). To exclude the unlikely possibility of changes in the proportion of skin disease in the population, the visits for skin conditions as a proportion of all visits in HMO/prepaid was compared to this proportion for all payors **(Table III)**. In 1990, the proportion of visits for skin problems within managed care was greater than the proportion for all payors (10.6% *vs* 8.0%, $p < 0.001$). By 1992, this difference was no longer present (8.0% *vs* 8.3%, $p > 0.2$). Thus, within managed care, growth in visits for skin conditions did not keep up with growth in visits for all conditions. During the 1990–1992 period, when HMO/prepaid visits increased by 45%, there was only a 9% increase in the number of visits for skin conditions (10.8 million in 1990 *vs* 11.8 million in 1992).

**Table II. Increased Skin Disease Visits to Dermatologists Despite Decreased Managed Care Visits to Dermatologists**[a]

| | 1990 Visits | 1991 Visits | 1992 Visits |
|---|---|---|---|
| Skin disease visits to dermatologist for all payors | 22.2 | 26.5 | 24.1 |
| Skin disease visits to dermatologist for HMO/prepaid insurance | 3.6 | 3.3 | 2.8 |
| Total visits to all physicians for skin conditions | 56.5 | 59.4 | 63.4 |

[a] The data are reported in millions of office visits.

**Table III. The Proportion of Visits in Managed Care for Skin Conditions is Shrinking**[a]

| | 1990 Visits | 1991 Visits | 1992 Visits |
|---|---|---|---|
| HMO/prepaid | 10.6% | 9.0% | 8.0% |
| All payors | 8.0% | 8.9% | 8.3% |

[a] The proportion of visits pertaining to the skin was calculated as the number of skin disease visits divided by the number of total visits for each payor source.

**Growth in Demand for Treatment of Skin Conditions Reduces the Impact of Managed Care on Dermatologists** The impact of the reduction of dermatology visits with managed care payors on overall demand for dermatologist services was analyzed **(Table II)**. The total number of visits to dermatologists in 1989 was 21.3 million (Stern and Nelson, 1993). This increased to 26.5 million visits by 1991 and 24.1 million in 1992. Thus, although there were 800,000 fewer HMO/prepaid insurance plan visits to dermatologists between 1990 and 1992, there was still an overall increase of 1.9 million visits to dermatologists. The changing payor mix for dermatology visits over this interval is presented in **Table IV**.

The increased demand for dermatologist services was not primarily due to an increase in the proportion of patients seen by dermatologists. In 1989, 41% of skin care visits were to dermatologists, much lower than the 50% reported in 1980 (Stern and Nelson, 1993). In 1990, dermatologists cared for 39.6% of the visits, 44.6% in 1991, and 37.9% in 1992. The increased demand for dermatologist services appears to be due to the marked growth in the total number of visits for skin disease. Although there was only a 9% increase in office visits for skin problems over the 15-y period between 1974 and 1989 (and a 4% decrease between 1980 and 1989) (Stern *et al*, 1977; Stern and Gardocky, 1986; Stern and Nelson, 1993), there was a 24% increase in office visits for skin problems in the 4-y period 1989–1992 (51 million in 1989 to 63.5 million in 1992).

**Increasing Complexity of Care for Both Dermatologists and Non-Dermatologists** Potential effects of transferring the care of patients from dermatologists to non-dermatologists are an increase in the complexity of skin problems seen by dermatologists and a reduction in the proportion of patients who are referred from other physicians (Hughes and Waters, 1993). Both these phenomena were observed **(Table V)**. To assess complexity of care, the mean visit duration in minutes was analyzed under the assumption that more complex problems require longer visit times. The visit times are also a measure of physician resources used in the encounter. The mean visit duration ($\pm$SD) for dermatologists increased from $13.5 \pm 9.8$ in 1990 to $14.8 \pm 10.2$ in 1992 ($p < 0.001$). The mean visit duration in minutes for dermatologic care by all physicians for 1990, 1991, and 1992 also increased: $13.9 \pm 9.5$, $14.1 \pm 9.9$, $15.7 \pm 10.7$, respectively. The proportion of patients

**Table IV. Managed Care Decreased as a Source of Payment to Dermatologists Between 1990 and 1992**

| Expected Payment Sources | 1990 | 1991 | 1992 |
|---|---|---|---|
| Patient Self-Pay | 35.2% | 26.8% | 30.3% |
| Blue Cross/Blue Shield & other commercial insurance | 21.5% | 40.2% | 43.6% |
| Medicare | 16.7% | 23.0% | 23.2% |
| HMO/other prepaid insurance | 16.1% | 12.3% | 11.7% |
| Medicaid | 4.6% | 2.7% | 6.1% |
| No charge/unknown | 3.8% | 6.2% | 3.5% |
| Other Government | [a] | 1.3% | 3.1% |

[a] Information not available.

**Table V. Referrals to Dermatologists Decreased While Mean Visit Duration Increased Between 1990 and 1992**

| Outcome Variable | 1990 | 1991 | 1992 |
|---|---|---|---|
| First visit of patient to dermatologist | 28% | 23.4% | 22.5% |
| Proportion of patients referred by other physicians | 9.6% | 8.7% | 7.7% |
| Mean visit durations in minutes (±SD) | 13.54 ± 9.85 | 13.0 ± 8.8 | 14.8 ± 10.2 |

referred to dermatologists by other physicians decreased from 9.6% in 1990 to 7.7% in 1992 ($p < 0.01$). Additional data on the most common dermatologic conditions seen are presented in **Table VI**.

## DISCUSSION

Stern and Nelson (1993) first reported the diminishing role of dermatologists in the provision of dermatologic care. A fundamental insight they provide is that patients with traditional commercial insurance were more likely to visit dermatologists for their skin diagnoses than were patients with HMO/prepaid insurance. The principal hypothesis of this study was to test the prediction that, as managed care grows, there would be "a significant negative impact on demand for dermatologists' services." Although this study confirmed the underlying assumptions of this prediction—that managed care is growing and managed-care patients are less likely to see a dermatologist—visits to dermatologists actually increased by 8% between 1990 and 1992. This appears to be due to a rapid growth in total visits for skin conditions of 12% between 1990 and 1992, and 24% between 1989 and 1992. This growth is considerably more rapid than both the 9% growth in skin disease visits observed between 1974–1989 and the 8% growth in visits for all conditions between 1990 and 1992, and we doubt that such growth can be sustained. When the demand for treatment of skin problems stops growing, dermatologists' "slice of the pie" may begin to shrink. The drop in dermatologist visits of 10% between 1991 and 1992—in the face of a 5% growth in the number of all visits for skin disease—may indicate that the decline is at hand.

Unexpectedly, we found that visits for skin disease dropped as a proportion of all visits in managed care. Despite a 45% increase in the number of HMO/prepaid insurance visits for all conditions, there was only a 9% increase in the number of visits for skin problems and a significant decrease in the number of dermatologist visits with HMO/prepaid insurance. Why are the number of managed care skin disease visits not increasing in proportion to the growth of managed care? Changes in the level of overall health of enrollees—resulting in fewer visits per enrollee—does not explain the observation because the comparison is with the growth in managed care visits, not enrollees. If managed care is recruiting enrollees who don't have serious medical conditions, one might expect the proportion of visits within managed care that pertain to the skin to be increasing, rather than decreasing, as we found.

Changes in financial incentives within managed care may explain the decreasing likelihood of dermatologist visits and the decreasing proportion of skin-related problems. Financial incentives to limit care have become progressively more intense with the growth in for-profit and network HMOs (Gold *et al*, 1995; Kassirer, 1995; Woolhandler and Himmelstein, 1995). The decreasing proportion of visits in managed care that pertain to the skin may be a worrisome sign that skin problems are becoming less likely to be addressed in managed care. Furthermore, the continued decrease in the proportion of dermatologist visits for skin problems within managed care suggests that managed care may be increasingly limiting access to dermatologists.

We have found that patients with Medicare—like traditional insurance enrollees—appear to choose dermatologists to provide their skin care. Medicare enrollees account for a significant portion of the visits to dermatologists **(Table IV)**. HMOs are growing as a means of Medicare coverage, however, as they are perceived as a mechanism by which to slow the growth in Medicare spending (Iglehart, 1992; Clement *et al*, 1994; Ellwood and Enthoven, 1995). During the period we analyzed, HMO enrollees accounted for less than 10% of those covered by Medicare (Iglehart, 1992). Whereas the growth in managed care may have a profound impact upon the availability of patients for dermatologists, conversion of Medicare to a managed-care system could further jeopardize the demand for dermatologists. Assuming that Medicare enrollees in 1992 had the same likelihood of consulting a dermatologist for skin problems as enrollees in managed care, we estimate there would have been 8% (2 million) fewer visits to dermatologists.

For dermatology to survive within managed care, dermatologists must be shown to be cost-effective (Lazarus, 1994). Studies demonstrating greater diagnostic accuracy and treatment skills are helpful (Pariser and Pariser, 1987; Ramsey and Fox, 1991; Federman *et al*, 1995; Solomon *et al*, 1996), but these studies do not demonstrate that dermatologists provide a better outcome at lower cost (Lazarus, 1994; Ellwood and Enthoven, 1995). The NAMCS data set does not include outcome information, such as response to treatment or quality of life after treatment, so we could not address the issue of effectiveness. On the "cost" side, the data set does provide data on physician time as reflected in the "visit time"

**Table VI. Top Ten Dermatologic Diagnoses For all Physician Visits By Year (Thousands)**

| 1990 | | | 1991 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|
| Diagnosis | Total Visits To All Physicians | Visits To Dermatologists (% of each diagnosis) | Diagnosis | Total Visits To All Physicians | Visits To Dermatologists (% of each diagnosis) | Diagnosis | Total Visits To All Physicians | Visits To Dermatologists (% of each diagnosis) |
| Contact dermatitis | 5,420 | 1,735 (32.0%) | Acne vulgaris | 6,167 | 4,713 (76.4%) | Contact dermatitis | 7,428 | 2,712 (36.5%) |
| Acne vulgaris | 4,894 | 4,208 (86.0%) | Contact dermatitis | 5,996 | 2,125 (35.7%) | Acne vulgaris | 5,755 | 5,144 (89.4%) |
| Viral wart | 4,071 | 1,741 (42.8%) | Keratosis | 4,177 | 3,656 (87.5%) | Viral infection NOS[a] | 4,113 | 19 (0.5%) |
| Keratosis | 3,426 | 2,734 (79.8%) | Viral wart | 3,635 | 1,831 (50.4%) | Viral wart | 3,380 | 1,674 (49.5%) |
| Epidermoid cyst | 3,200 | 741 (23.2%) | Epidermoid cyst | 3,118 | 1,002 (32.1%) | Epidermoid cyst | 2,792 | 698 (25.0%) |
| Viral infection NOS | 3,158 | 15 (0.5%) | Viral infection NOS | 2,949 | 0 | Keratosis | 2,554 | 2,184 (85.5%) |
| Benign neoplasm, NOS | 1,823 | 112 (61.2%) | Skin cancer NOS | 2,319 | 2,000 (86.2%) | Skin cancer NOS | 2,065 | 1,759 (85.1%) |
| Skin cancer NOS | 1,594 | 1,102 (69.1%) | Benign neoplasm, NOS | 2,184 | 1,328 (60.8%) | Abscess or cellulitis | 1,850 | 70 (3.8%) |
| Abscess or cellulitis | 1,307 | 55 (4.2%) | Psoriasis | 1,323 | 1,222 (91.6%) | Open wound | 1,773 | 0 |
| Urticaria, NOS | 1,250 | 237 (19.0%) | Dermatosis NOS | 1,303 | 163 (12.5%) | Benign neoplasm, NOS | 1,537 | 941 (61.7%) |

[a] NOS, not otherwise specified.

variable. Data presented here showing longer visit times for patients seen by non-dermatologists *versus* dermatologists adds important evidence that fewer resources are used when dermatologists are responsible for the treatment of skin disease. While shorter visit times to dermatologists could also be explained by less complex visits, we feel it is a reasonable assumption that the complexity of care of patients under the care of dermatologists is at least as great as that of patients with skin disease cared for by non-dermatologists.

With the growth of managed care, we expect the complexity of care provided by dermatologists to increase, as only patients with more severe skin disease are referred. This also implies greater complexity of skin care for the non-dermatologists, as they begin to care for patients they previously would have referred. The observed increased visit duration for both the dermatologists and the non-dermatologists is compatible with this hypothesis. This raises another question for dermatology to consider: what can we do to improve non-dermatogists' abilities to handle the greater quantity and new distribution of skin conditions for which they care (Johnson, 1994)? Another observation of this study is the decreasing proportion of patients referred to dermatologists from other physicians. Resentment to this and to the changes in the health-care system may complicate the question of how to best educate non-dermatologists (Little *et al*, 1993).

The NAMCS provides a comprehensive assessment of outpatient medical services provided in the United States and permits analysis of outpatient dermatologic care. Since Mendenhall *et al* (1978) found that 97% of all dermatologic services are performed outside the hospital setting, estimates of outpatient care, as found in the NAMCS, should mirror the vast majority of skin disease care. Certain limitations of this analysis of data supplied by the NAMCS deserve mention. The patient population within managed care may be significantly different from the traditional insurance plan population, especially in regard to chronic diseases. We have attempted to address this problem by analyzing visits for specific skin conditions; the finding of lower dermatologist utilization within managed care is still observed. Another limitation is the variability in the data under conditions with fewer visits, such as in the data for specific diagnoses in **Table VI**. This is a statistical effect of the small sample representing data on specific diagnoses. Such data should be interpreted cautiously but may be useful for such purposes as determining the most common skin conditions for future analyses or educational programs. The exclusion of federally employed physicians from the NAMCS database may also contribute to under-reporting of dermatologic disorders. Also, the nature of the survey does not permit verification of dermatologic diagnoses. It is possible, therefore, that misclassification of cutaneous disorders occurred; this limitation is not likely to impact significantly the number of visits for all skin conditions, however. Since NAMCS data are based on utilization of health-care services, they do not permit calculation of cutaneous disease incidence or prevalence rates in the United States.

Perhaps the most important limitation of this analysis is the short (3-y) period covered by the analysis. Trends observed over this period may not detect the full impact of managed care and may not reflect the long-term changes that are occurring in this area. The reliability of health services predictions based on current trends is limited but is better than predictions not based on data (Bilheimer and Reischauer, 1995). The impact of managed care on dermatologists appears to have been tempered by the rapid overall growth in visits for skin care. This rapid growth may be due to successful efforts to increase the visibility of our specialty and to focus attention on disorders of the skin. As this growth reaches a plateau, we can expect a much greater effect of managed care on the practice of Dermatology.

Despite these limitations, analysis of the 1990 to 1992 NAMCS data demonstrate the availability of these data for analysis and their potential for monitoring U.S. health-care delivery. A shift in the paradigm of health-care delivery is occurring, and physicians are choosing practice settings to accommodate this change (Hughes and Baker, 1995). The trends that we observed in a variety of areas could have a significant impact on dermatology.

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